

*40. *DENDRASPIIS ANGSTICEPS*, Smith.

A single specimen, without label.

*41. *BITIS ARIETANS*, L.

Stonybrook, 19.8.94; W. of Juba R., 22.3.95.

*42. *ECHIS CARINATUS*, Schn.

Lake Stephanie, 11.6.95.

BATRACHIANS.

*1. *RANA ORNATA*, Pfrs.

W. of Juba R., 22.3.95; 26.3.95.

2. *RANA MASCARENIENSIS*, D. & B.

Dawa R., 2.3.95; Lake Rudolf, 11.8.95.

3. *CASSINA OBSCURA*, Blgr.

W. of Juba R., 12.3.95; 26.3.95.

4. *BUFO REGULARIS*, Reuss.

L. Abeia, 11.5.95; L. Stephanie, 11.6.95.

EXPLANATION OF THE PLATES.

PLATE VII.

Agama smithii, p. 213.

PLATE VIII.

Agama lionotus, with side view of tail, p. 214.

2. Report on a Collection of Fishes made by Dr. A. Donaldson Smith during his Expedition to Lake Rudolf. By Dr. ALBERT GÜNTHER, F.R.S.

[Received January 13, 1896.]

(Plate IX.)

Having been entrusted by Dr. Donaldson Smith with the examination of the Fishes collected by him during his recent expedition in Eastern Africa, I herewith give the result of my examination. Owing to the great difficulties of the transport of preserving materials, the number of specimens had to be restricted, the entire collection amounting to 35 specimens which are referable to 18 species. The chief interest attached to this collection centres in the fishes from Lakes Rudolf and Stephanie,

whence I believe no specimens have been received previously. I distinguish the following eight species among them :—

- Polypterus bichir*.
Chromis niloticus.
 — *tristrami*.
Synodontis schal.
Citharinus geoffroyi.
Alestes rupeellii.
Distichodus rudolphi, sp. nov.
Barbus, sp.

It is a noteworthy fact that five of these species belong to the fauna of the Nile, although they are by no means limited to that river, having been found in various other parts of Tropical Africa. *Chromis tristrami* (or *Acerina zillii*, Gerv.) has been described from fresh and saline waters of the oases of the Sahara; and *Distichodus rudolphi* is closely allied to the Nilotic *D. rostratus*. The other species enumerated in the following list were obtained *en route* to Lake Rudolf or on the return journey, in various localities which will be indicated under the head of the several species.

1. POLYPTERUS BICHIR, Geoffr.

Two young specimens from Lake Rudolf, both belonging to the variety with ten spines which also occurs in the Upper Nile and West Africa.

2. CHROMIS NILOTICUS, Hasselq.

Of this widely distributed species, the Bolti of the Nile, three specimens were in the collection.

a. One from Lake Abeia, 24 cm. long; its scales are somewhat fewer in number than in typical specimens, viz. 27 along the lateral line. D. $\frac{16}{13}$.

b. One from Lake Stephanie, 16 cm. long. The teeth of this specimen are equally small, as in the preceding specimen, but fewer in number, possibly owing to its younger age and less advanced growth of the jaws. D. $\frac{15}{13}$.

c. A young specimen from Lake Rudolf, 10 cm. long. D. $\frac{15}{13}$.

3. CHROMIS TRISTRAMI, Gthr.

Specimens from Lake Rudolf cannot be distinguished from the types which were obtained in the oases of the Eastern Sahara. The teeth of this species are much broader and larger than those of the preceding species.

a. A rather large specimen, but with the hinder part of the body decomposed, from Lake Rudolf (12.8.95). D. $\frac{16}{13}$.

b. Another obtained in a dry watercourse, some 10 miles from Lake Rudolf (16.8.95), 15 cm. long. D. $\frac{14}{13}$.

4. *CHROMIS SPILURUS*, Günth. Proc. Zool. Soc. 1894, p. 89.

This species was discovered by Dr. Gregory in pools remaining in dried-up watercourses of North Giriama. Dr. Donaldson Smith found this species (30.12.94) under similar conditions near the Shebeli River, and (8.12.94) in water-holes near Sheikh Husein. All the specimens, those collected by Dr. Gregory as well as by Dr. D. Smith, are small, not exceeding 12 cm. in length.

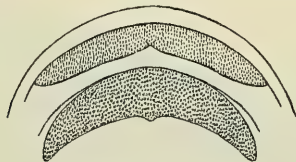
5. *CLARIAS SMITHII*, sp. n.

Clarias lazera, Günth. P. Z. S. 1894, p. 89 (nec C. V.).

D. 70-73. A. 58-62. V. 1/9.

Vomerine teeth (Fig. 1) granular, forming a very broad band, nearly twice as broad as that of the intermaxillary teeth, with an obtuse, rounded projection behind in the middle of its concavity. Transversely the intermaxillary band is wider than the vomerine. The mandibular dental band is as broad as the intermaxillary. Upper surface of the head with not very coarse granulations; the length of the head is two sevenths of the total, without caudal. The maxillary barbel reaches beyond the root of the pectoral, the nasal barbel being not quite half its length. The pectoral fin extends to, or nearly to, the origin of the dorsal, the spine being two thirds of the fin. Dorsal fin separated by a short interspace from the caudal.

Fig. 1.



Teeth of *Clarias smithii*.

A single specimen, 45 centim. long, is in the collection, and was captured in the middle course of the Shebeli. The breadth of the intermaxillary band of teeth is 5 millim., that of the vomerine 8 millim.; the transverse width of the former is 51, of the latter 47 millim. A fish captured by Dr. Gregory at Ngatana, and enumerated by me under the name of *Clarias lazera*, is evidently of the same species.

The African species of *Clarias* are extremely similar in general appearance and most difficult to define, chiefly on account of the uncertainty which attaches to almost all the taxonomic characters which have been used for distinguishing them. Some of the characters are certain to undergo considerable changes with age, for instance the vomerine teeth, which are not likely to be granular in very young specimens. The presence or absence of a posterior process of the vomerine band is a more reliable character, as is

proved by the series of *C. gariepinus* in the British Museum. Peters (Reise n. Mossambique) was of a different opinion and has attempted to prove the variability of this character, but, in my view, he has confounded two or even more species under the name of *C. mossambicus*.

Two small specimens of *Clarias* collected on the Shebeli R. (1 Febr., 1895) are not in sufficiently good condition to be determined. The form of the vomerine band is very different from that of the fish described as *C. smithii*. A collection of a large series of specimens of all ages of any species of *Clarias* from the same locality is very much needed; but until this is done, it seems to be safer to utilize all characters observable in apparently mature or nearly mature specimens.

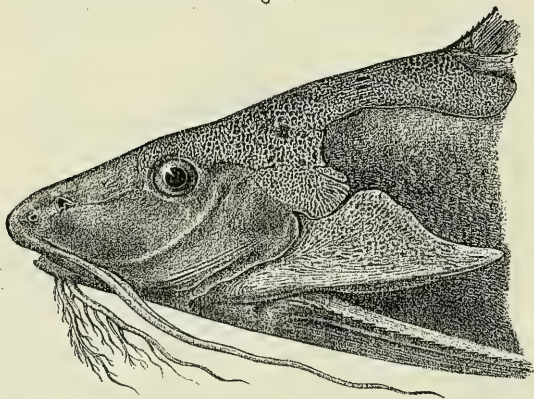
6. *EUTROPIUS DEPRESSIROSTRIS*, Ptrs.—Shebeli R.

7. *SYNODONTIS GELEDENSIS*, sp. n.

Allied to *S. serratus*¹.

General form of the body somewhat elongate; snout rather produced, subconical; diameter of the orbit two sevenths of the length

Fig. 2.



Synodontis geledensis.

of the snout. The gill-opening extends downward to before the root of the pectoral fin. Mandibular teeth in moderate number,

¹ I must again draw attention to an unfortunate clerical error in Cat. Fish. v. p. 212, where the line "B. Mandibular teeth not longer than the eye," ought to have been placed above "*Synodontis serratus*."

shorter than the eye, in a very narrow band. The maxillary barbels reach to the end of the humeral spine and are lined with a narrow membrane interiorly. Mandibular barbels reaching to the root of the pectoral, provided with numerous long fringes. Nuchal carapace tectiform, obtusely rounded behind, its end reaching to below the first soft dorsal ray. Humeral spine not quite extending so far backward, much longer than high, with its upper margin deeply excised, terminating in a sharp point.

Adipose fin rather long, the interspace between it and the dorsal being less than the base of the latter. Dorsal spine serrated anteriorly, shorter than the pectoral spine, which is strongly serrated along both edges and equal to the distance of the foremost part of the soft part of the trunk from the snout. Dorsal and pectoral spines and the caudal lobes produced into filaments. Coloration uniform.

D. 1/7. A. 11. P. 1/9.

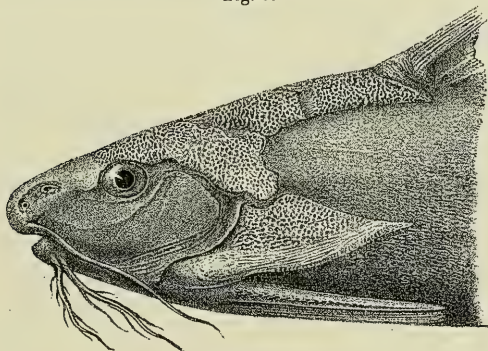
A single specimen, 30 cm. long, was obtained on Jan. 19, 1895, at Geledi on the Shebeli.

This fish is closely allied to *S. serratus*, but sufficiently distinguished by the different form and outline of the cephalic carapace.

8. *SYNODONTIS SCHAL*, Bl. Schn.

As the specimen in the collection differs in some respects from the typical form, I give a description of it.

Fig. 3.



Synodontis schal.

D. 1/7. A. 12. P. 1/9.

Rather stout in general habit; snout comparatively broad; diameter of the orbit two fifths of the length of the snout, and of

the width of the interorbital space. The gill-opening extends downward to before the root of the pectoral fin. Mandibular teeth in a very narrow and short row, less than 20 in number, shorter than the eye. The maxillary barbels do not reach the end of the humeral spine and are simple; mandibular barbels reaching to the root of the pectorals, sparsely provided with fringes. Nuchal carapace tectiform, compressed into a median ridge, rather pointed behind, its end reaching to below the first soft dorsal ray. Humeral spine reaching equally far backward, much longer than high, with its upper margin oblique and nearly straight, terminating in a sharp point. Skin of the side of the body villous.

Adipose fin moderately long, the interspace between it and the dorsal being less than the base of the latter. Dorsal spine short, with a sharp anterior edge which shows scarcely a trace of serrature about the middle of its length, and is probably quite smooth in older examples; this spine is shorter than the pectoral spine, which is serrated along both edges and shorter than the distance of the foremost part of the soft part of the trunk from the snout. Coloration uniform.

A single specimen, 21 cm. long, was obtained in Lake Stephanie on June 11, 1895.

9. *SYNODONTIS SMITHII*, sp. n. (Plate IX.)

D. 1/7. A. 13. P. 1/9.

Rather stout in general habit; snout comparatively broad, not much attenuated in front; diameter of the orbit one half of the length of the snout, and of the width of the interorbital space. The gill-opening extends downward to before the root of the pectoral fin. Mandibular teeth in a narrow, short series, about 25 in number, shorter than the eye. The maxillary barbels do not reach the end of the humeral spine and are simple; mandibular barbels reaching to the root of the pectorals, provided with long fringes. Nuchal carapace tectiform, compressed into a median ridge, rather pointed behind, its end reaching to below the first soft dorsal ray. Humeral spine reaching equally far, or even a little farther backward, much longer than high, with its upper margin oblique, but straight, terminating in a sharp point. Skin of the side of the body villous, particularly along the lateral line.

Adipose fin moderately long, the interspace between it and the dorsal being less than the base of the latter. Dorsal spine with a sharp, non-serrated anterior edge, equal in length to the pectoral spine, which is strongly serrated along both edges, the inner serrature being coarser than the outer. The length of these spines exceeds somewhat the distance of the foremost part of the soft part of the trunk from the snout. Coloration uniform.

A single specimen, 24 cm. long, was obtained.

This species is allied to *S. schal*, but distinguished by its enormously long spines.

10. *SYNODONTIS PUNCTULATUS*, Günth. P. Z. S. 1889, p. 71, pl. viii. fig. A.

A specimen brought from the Webi Shebeli differs somewhat from the types which were collected on Kilima-njaro. Not only is the upper surface of the head granular, not covered by thin skin as in the types, but also the dorsal fins are more approximated.

11. *CITHARINUS GEOFFROI*, Cuv.

This species extends from the Lower Nile to the Gambia and Niger.

Two very young specimens from Lake Rudolf.

12. *ALESTES RÜPPELLII*, Gthr.

Hitherto known from the Upper Nile.

One very young specimen from Lake Rudolf.

13. *ALESTES AFFINIS*, Günth. P. Z. S. 1894, p. 90.

Discovered by Dr. Gregory in the Tana River.

Dr. Donaldson Smith brought home three specimens up to 15.5 cm. in length.

a, b. From the Dawa River (25 & 28.2.95).

c. From the Shebeli River (30.8.94).

14. *DISTICHODUS RUDOLPHI*, sp. n.

D. 21-22. A. 14. L. lat. 100-108. L. transv. 18/24.

The height of the body is contained $3\frac{1}{2}$ times in the total length (without caudal), the length of the head thrice or $3\frac{1}{3}$ times. Snout rather pointed. Twenty-four teeth in the lower jaw. Silvery, greenish on the back, with nine blackish cross-bars and a large black præcaudal spot.

The two specimens being very young, only 54 millim. long, it would not be safe to introduce more characters into the diagnosis of this species. They were obtained from Lake Rudolf.

15. *LABEO GREGORII*, Günth. Proc. Zool. Soc. 1894, p. 90.

Discovered by Dr. Gregory in the Tana River.

Dr. Donaldson Smith brought from the Guaso Nyiro a dried specimen, 22 cm. long, which seems to belong to this species. Unfortunately, the form of the mouth is destroyed, owing to the mode of preservation.

16. *BARBUS BYNNI*, Forsk.

A large specimen of this common Nilotic species, from the Shebeli River.

Two very young specimens, 10 cm. long, from a stony brook running into the Erer R. (17 & 18.8.94), are probably the same species.

17. BARBUS, sp.

A very young specimen, 5 cm. long, from Lake Rudolf, cannot be specifically determined.

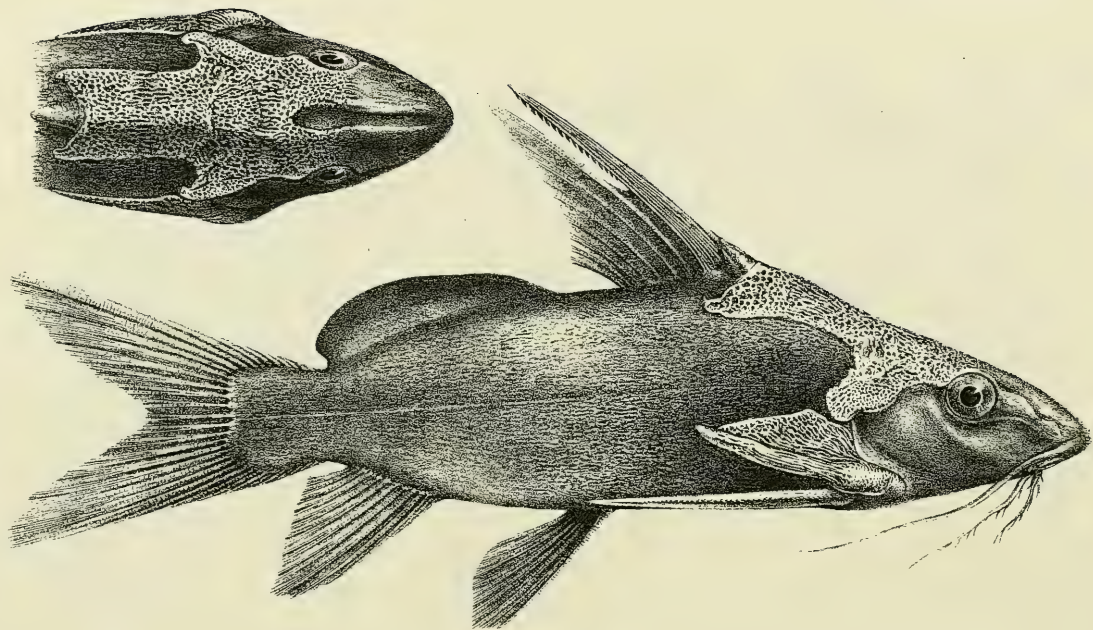
18. MORMYRUS ZAMBANENJE, Ptrs.

In a specimen from Geledi on the Webi Shebeli (19.1.95) the dorsal fin is a little more than half as long as the anal. D. 21. A. 41.

3. Remarks on the System of Coloration and Punctuation in the Beetles of the Genus *Calligrapha*. By MARTIN JACOBY, F.E.S.

[Received January 2, 1896.]

The paper which I have the honour to lay before the Society gives a short account of a somewhat exceptional feature in the Coleoptera, which occurs amongst the Chrysomelidæ in the genus *Calligrapha*, but in no other families of Coleoptera to my knowledge. This genus has its metropolis in Central America, and is represented by numerous prettily marked species, all more or less closely allied. In these insects, the ground-colour of the elytra is always pale yellow, but often assumes a golden hue when the insect is alive: this yellow ground-colour is marked with metallic brown or blue, sometimes violet spots, and stripes, but in many species this colour (if it can be so called) is replaced by reddish-fulvous or brown, not of a metallic hue. The elytra of most Coleoptera are impressed with more or less deep punctures, either arranged in longitudinal rows or irregularly distributed, and even when the elytra are pubescent the punctures will be seen when the hairs are removed. In no other insects of this order do the punctures seem to be dependent on the coloration or pattern of the elytra, or *vice versa*, but both go their own way; but in the case of the genus *Calligrapha* the interesting observation may be made that nearly all stripes or spots, no matter how few or many or what may be their shape, are bounded or surrounded at their margins by a row of deep punctures, deeper than those of the ground-colour, beyond which the colour does not extend. This is very remarkable, since I know of no instance in which punctures assume a circle in other species, much less that circular and longitudinal rows of punctures are found in the same individual according to the design as is the case in *Calligrapha*. The question which strikes one now is, how could this coloration influence a deep punctuation or the latter the colouring of the insect: a few instances are found in which some of the spots or bands are free from punctures at their lower portion, but their outlines are just as well defined as those which have the punctures complete. According to Burmeister, the punctures of the elytra are formed by the interruption of the chitinous matter, causing small pits or punctures to be formed, but the regularity



G. Green del. et lith.

$\frac{4}{5}$

SYNODONTIS SMITHII.

Mintern Bros. imp.